Exhibit E

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

REPAIRIFY, INC., and	)	
	)	
Plaintiff,	)	Case No. 6:21-cv-00819-ADA
	)	
v.	)	
	)	
KEYSTONE AUTOMOTIVE	)	
INDUSTRIES, INC. d/b/a ELITEK	)	
VEHICLE SERVICES, and DOES 1	)	
through 20, inclusive,	)	
	)	
Defendants.	)	

DEFENDANT'S FINAL INVALIDITY CONTENTIONS

I.   INTRODUCTION

Pursuant to the Amended Scheduling Order agreed to by the Parties, Defendant Keystone Automotive Industries, Inc. d/b/a Elitek Vehicle Services ("Elitek") herby serves its Final Invalidity Contentions on Plaintiff Repairify Inc. ("Repairify").

II.   ASSERTED PATENTS

In its preliminary infringement contentions, Repairify alleges that Elitek infringes claims 1-17 of United States Patent No. 8,688,313 ("the '313 Patent"), claims 1-3 and 6-10 of U.S. Patent No. 9,684,500 ("the '500 Patent"), and claims 1, 2, 5, and 6 of U.S. Patent No. 10,528,334 ("the '334 Patent") (collectively, the "Asserted Claims" of the "Asserted Patents").

III.   PRELIMINARY STATEMENTS AND RESERVATION OF RIGHTS

These disclosures are based on Elitek's present understanding of the meaning and scope of the Asserted Claims. Furthermore, these Final Invalidity Contentions are made solely for the purpose of this action. The information provided herein shall not be deemed an admission regarding the scope of any claims or the proper construction of those claims or any terms contained therein. Elitek expressly reserves the right to amend or supplement its Final Invalidity Contentions if its understanding of the Asserted Claims changes, including as the Court construes terms, or if the alleged priority dates of any Asserted Claims change. Elitek reserves the right to withdraw or add prior art to this disclosure in light of the Court's claim construction rulings, or as information is obtained from parties or third parties during discovery.

Since many of the elements in the Asserted Claims repeat themselves throughout the Asserted Patents, Elitek has stated its contentions with respect to a given claim element along with the identification of where that element can be found in the prior art. Elitek's Final Invalidity Contentions relating to any element apply to every claim in which that element is found. Further, a contention that any one element of a claim renders a claim invalid for lack of enablement, utility,

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definiteness, or a failure to meet the description requirement means that the entire claim is invalid

for that reason, regardless of how many other grounds for patent invalidity are otherwise provided,

or how many other elements are invalid.

Elitek's discovery and investigation in connection with this action are continuing, and thus,

these disclosures are based on information to date. Elitek has not yet completed its investigation,

collection of information, discovery, or analysis relating to this action, and discovery may require

Elitek to modify, amend, or supplement these contentions. Elitek is still seeking discovery of

information in the possession, custody, or control of Repairify or third parties that relate to prior

art. In addition, fact discovery has just begun, and Elitek has not had the opportunity to take

depositions of the named inventor(s) of the Asserted Patents or other persons, including third

parties, having potentially relevant information. Nor has Elitek had the opportunity to take expert

discovery. Finally, Elitek's investigation and analysis of, *inter alia*, prior art, the state of the

relevant art of the purported invention, and the knowledge and experience of one of ordinary skill

in the art is continuing. Accordingly, Elitek reserves all rights to amend, modify, or supplement

its Final Invalidity Contentions as additional information becomes available and as discovery and

its investigation proceeds.

Elitek's invalidity claim charts cite to particular teachings and disclosures of the prior art

as applied to features of the Asserted Claims. However, persons having ordinary skill in the art

generally view an item of prior art in the context of the reference as a whole, other publications,

literature, products, and their own experience and understanding. As such, the cited portions in

claim charts are exemplary only. To understand and interpret any specific statement or disclosure

of a potential prior art reference or invention, a person of ordinary skill in the art may rely on other

information within the reference or invention, along with other publications and their general

scientific knowledge. Where Elitek cites to a particular figure in a reference, the citation should

be understood to encompass the caption and description of the figure and any text relating to the

figure. Similarly, where Elitek cites to particular text referring to a figure, the citation should be

understood to include the figure and caption as well. Furthermore, Elitek reserves the right to rely

on uncited portions of the prior art references and on other publications and expert testimony as

aids in understanding and interpreting the cited portions, as providing context thereto, as additional

evidence that the prior art discloses a claim limitation or the invention as a whole, as evidence of

the state of the art at a particular time, and/or as evidence of the obviousness factor of

contemporaneous development by others. Elitek further reserves the right to rely on uncited

portions of the prior art references, other publications, and testimony, including expert testimony,

to establish bases for combination of prior art references that render the Asserted Claims obvious.

The references discussed in the claim charts may disclose the elements of the Asserted

Claims explicitly and/or inherently, and/or they may be relied upon to show the state of the art in

the relevant time frame. The lack of a particular citation for an element should not be deemed an

admission that the element is not disclosed or is not inherent in the reference. In the alternative to

Elitek's anticipation contentions, Elitek contends the Asserted Claims are obvious, as further

discussed below. Those contentions are not to be construed to suggest that any reference included

in any obviousness contention is not by itself anticipatory.

Prior art patents or publications included herein may be related (*e.g.*, as a divisional,

continuation, continuation-in-part, parent, child, or other relation or claim of priority) to earlier or

later filed patents or publications, may have counterparts filed in other jurisdictions, or may

incorporate (or be incorporated by) other patents or publications by reference. The listed patents

or publications are intended to be representative of these other patents or publications, to the extent

they exist, and Elitek reserves the right to rely on parallel or similar citations in related patents or publications. On information and belief, each listed publication or invention became prior art at least as early as the dates given.

Elitek also incorporates, in full, all prior art references cited in the Asserted Patents and any counterparts or related patent applications, all references incorporated by reference into those references, and the Asserted Patents', counterparts', and related patents' prosecution histories. Elitek reserves the right to amend its Final Invalidity Contentions should Repairify assert additional infringement theories, including infringement under the doctrine of equivalents.

IV. ASSERTED INVALIDITY CONTENTIONS

A. IDENTIFICATION OF CLAIMS THAT ARE DIRECTED TO INELIGIBLE SUBJECT MATTER UNDER 35 U.S.C. § 101.

The Patent Act defines patentable subject matter as: "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. Subject matter that falls outside of these four categories is not patentable. *In re Nuitjen*, 500 F.3d 1346, 1353 (Fed. Cir. 2007). "If a claim covers material not found in any of the four statutory categories, that claim falls outside the plainly expressed scope of § 101 even if the subject matter is otherwise new and useful." *Nuijten,* 500 F.3d at 1354. For example, transitory signals do not fall within any statutory category of patentable subject matter, and, therefore, any claims reciting transitory signals are invalid. *Nuijten*, 500 F.3d at 1357.

All of the Asserted Claims recite communication involving a "bi-directional communication link." *See generally* Dkt. No. 1. The specification of the Asserted Patents discloses that the "bi-directional communication link" is established between two devices and "is carried over an electronic communications network, such as the Internet." Dkt. No. 1-1 at 5:23-24; *see also id.* at 15:49-50; Dkt. No. 1-2 at 15:6-7; Dkt. No. 1-3 at 14:66-15:1. The specification

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also describes that the local and remote devices are first connected to the Internet, and "[o]nce the connection [to the Internet] has been confirmed, the call center establishes the bi-directional communication link" between the devices, at which point data can be exchanged between the two devices. *Id.* at 12:21-39. Thus, as defined by the specification, the recited bi-directional communication link is not a process, machine, manufacture, or composition of matter. Because the recited bi-directional communication link falls outside of any statutory category of patentable subject matter*,* the Asserted Claims are unpatentable under 35 U.S.C. § 101.

Moreover, courts have long held that laws of nature, natural phenomena, and abstract ideas are not patentable regardless of whether they fall within one of the four categories. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). To determine if a claim falls into one of these exceptions for patent eligibility, courts apply a two-step analysis. *Id.* at 217; *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 72, 78 (2012). First, the court determines whether a patent claim is directed to an unpatentable law of nature, natural phenomenon, or abstract idea. *Yu v. Apple Inc.,* 1 F.4th 1040, 1043 (Fed. Cir. 2021) (*citing Alice*, 573 U.S. at 217). If so, the court then determines whether the claim includes an inventive concept sufficient to transform the claim into patent-eligible subject matter, rather than (for example) implementing the abstract idea with conventional equipment. *Id.*

The Asserted Claims are invalid under 35 U.S.C. § 101 because they are directed toward an unpatentable abstract idea of communicating with and programming a remote device over a network. Dkt. No. 1-1 at 4:64-65. The Asserted Patents disclose that it is well-known to communicate with a vehicle (to scan and/or program the vehicle) by connecting (directly or wirelessly) a scan tool/computer to a vehicle through a connector and using an onboard diagnostic protocol ("OBD"). *Id.* at 1-4. The Asserted Patents explain that scan tools are expensive, are often

specific to a particular brand of vehicle requiring a shop to acquire many different ones and are

constantly being updated. *Id.* at 4:43-60. The Asserted Patents allege to be an advance over the

prior art by having the scan tool/computer located remotely and communicating and programming

the vehicle through a network. *Id.* at 4:43-45 ("there is a need in the art for a system and method

that allows a technician to service and program a vehicle through its OBD [*sic*] interface from a

remote location."). Therefore, instead of each repair shop buying a multitude of scan tools, a single

call center can purchase them and then communicate with and program many vehicles remotely

over a network. *Id.* The Asserted Patents do not identify or describe any other difference or

advantage over the prior art other than communicating and programming a remote device over a

network. *See generally id.*

Furthermore, the Asserted Claims recite connectors, communication devices, scan tools,

and networks, such as the Internet, performing tasks such as establishing connections, requesting

data, receiving data, and converting data. All of these components are described in the admitted

prior art performing routine functions. *See generally,* Dkt. No. 1-1 at 1:12-4:42; *see also, e.g., id.*

at 5:19-22 ("the scan tool comprises a handheld computer scan tool known in the art"); *id* at 8:46-

49 (use of modems to access the "communication network (for example, the Internet) to establish

the bi-directional communication link"). Even the claimed OBD protocol was well-known. Dkt.

No. 1-1 at 1:27-2:58. The Asserted Patents do not describe any new or improved connector,

interface, tool, connection, protocol, network, or implementation thereof or describe any new or

improved method of receiving, converting, or sending data. *See id. generally.* The use of

conventional components performing routine tasks cannot be the inventive concept. *See Two-Way*

Media Ltd. v. Comcast Cable Commc'ns, LLC, 874 F.3d 1329, 1340 (Fed. Cir. 2017) (holding that

when the hardware or configuration of hardware in a claim does not require "anything other than

conventional computer and network components operating according to their ordinary functions"

it does not provide the necessary inventive concept). Therefore, the Asserted Claims do not have

an inventive concept that transforms the abstract idea of communicating with and programming a

remote device over a network into patent eligible subject matter, and hence, the Asserted Claims

are invalid under 35 U.S.C. § 101.

> **B.   IDENTIFICATION OF LIMITATIONS THAT LACK WRITTEN DESCRIPTION, ARE NOT ENABLED, OR ARE INDEFINITE UNDER 35 U.S.C. § 112.**

35 U.S.C. § 112 at ¶ 1 states:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Furthermore, 35 U.S.C. § 112 at ¶ 2 states:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

That is, "a patent is invalid for indefiniteness if its claims, read in light of the specification

delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those

skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572

U.S. 898, 901 (2014). In view of the foregoing, Elitek contends that the following claim limitations

fail to comply with Section 112 due to lack of written description, not being enabled, and/or

indefiniteness and thus, render the Asserted Claims in which they are recited invalid:

Claim Limitation	Patent Claim	§ 112 Grounds
communication device/processor	'313 Patent, claims 1, 2, 9, 10 '500 Patent, claims 1, 2 '334 Patent, claim 1	These claims lack written description, are not enabled, and are indefinite. For example, these terms are means plus function terms, and the specification does not describe adequate structure for the functions recited. Also, the specification does not reasonably

Claim Limitation	Patent Claim	§ 112 Grounds
		convey to a POSITA that the inventor had possession of the claimed "communication device," and the specification does not disclose how the "communication device" enables a scan tool/computer to remotely scan and program a vehicle such that a POSITA could practice the invention without undue experimentation.
continuous bi-directional communication/link	'313 Patent, claims 1, 9	These claims lack written description, are not enabled, and are indefinite. For example, the specification does not reasonably convey to a POSITA that the inventor had possession of the claimed "continuous bi-directional communication" as it is not mentioned in the specification, and the specification does not disclose how the "continuous bi-directional communication" functions such that a POSITA could practice the invention without undue experimentation.
wherein said computer system is enabled by said continuous bi-directional communication using a standard OBD communications protocol to actively and continuously communicate with, scan and program said sub systems as if it were located proximate to said vehicle / wherein the first communication device and the second communication device provide communication between the vehicle scan tool and the vehicle computer system to enable the vehicle scan tool to scan and program a vehicle sub-system of the subject vehicle as if the vehicle scan tool were located proximate to the	'313 Patent, claims 1 and 9 '500 Patent, claim 1 '334 Patent, claim 1	These claims lack written description, are not enabled, and are indefinite. For example, the specification fails to provide reasonable certainty as to the meaning or scope of this term. Also, during prosecution, the patentee argued that in order for a remote tool to scan and program a vehicle as if it were proximate to the vehicle, the remote tool has to communicate using a continuous connection such that the remote tool is in essence inserted as a node on the vehicle's bus. A person of ordinary skill in the art would not be reasonably certain as to what a continuous connection is in this context or what it means to be "in essence" inserted as a node on the vehicle's bus. Also, the scope of what constitutes scanning and programming "as if [the scan tool] were located proximate to [the] vehicle" shifts with time as the networking and processing technologies advance. In addition, the specification does not reasonably convey to a POSITA that the inventor had possession of a scan tool/computer that could scan and program as if it were located proximate to the vehicle, and the specification does not disclose how the

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Claim Limitation	Patent Claim	§ 112 Grounds
subject vehicle / wherein the first communication device and the second communication device provide communication between the vehicle scan tool and the vehicle sub-system to enable the vehicle scan tool to scan and program the vehicle sub-system of the subject vehicle as if the vehicle scan tool were located proximate to the subject vehicle		scan tool/computer scans and programs a vehicle as if it were located proximate to it such that a POSITA could practice the invention without undue experimentation.
provide communication	'500 Patent, claim 1 '334 Patent, claim 1	These claims are not enabled. For example, the specification does not disclose how to provide communication between the two communication devices so that a scan tool can scan and program as if it were located proximate to the vehicle such that a POSITA could practice the invention without undue experimentation, especially in light of the prosecution history where the patentee argued that the invention required continuous bi-directional communication and active and continuous communication, not mere communication.
to actively and continuously communicate with / communication . . . is active and continuous	'313 Patent, claims 1 and 9 '500 Patent, claim 7 '334 Patent, claim 5	These claims lack written description, are not enabled, and are indefinite. For example, the specification does not reasonably convey to a POSITA that the inventor had possession of the claimed "active and continuous" communication as it is not mentioned in the specification, and the specification does not disclose how the "active and continuous" communication functions such that a POSITA could practice the invention without undue experimentation.
wherein said bi-directional communication link comprises the Internet	'313 Patent, claim 14 '500 Patent, claim 3	These claims lack written description and are not enabled. For example, the specification does not reasonably convey to a POSITA that the inventor had possession of the bi-directional communication link that

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Claim Limitation	Patent Claim	§ 112 Grounds
	'334 Patent, claim 2	comprises the Internet because the specification discloses that the bi-directional communication link is carried over the Internet, not comprises it, and the specification does not disclose how a bi-directional communication link could comprise the Internet such that a POSITA could practice the invention without undue experimentation.
full duplex	'500 Patent, claim 8 '334 Patent, claim 6	These claims lack written description and are not enabled. For example, the specification does not reasonably convey to a POSITA that the inventor had possession of the claimed "full duplex" communication as it is not mentioned in the specification, and the specification does not disclose how the "full duplex" communication functions such that a POSITA could practice the invention without undue experimentation.

C.   IDENTIFICATION OF PRIOR ART THAT RENDERS THE ASSERTED CLAIMS INVALID AS ANTICIPATED OR OBVIOUS UNDER 35 U.S.C. §§ 102 OR 103.

The Asserted Claims of the Asserted Patents are invalid under 35 U.S.C. §§ 102 and/or 103. The prior art discussed in this section, *see infra*, anticipate the Asserted Claims expressly or inherently, or in combination with each other, the knowledge of one of ordinary skill in the art, or the prior art cited in the prosecution history, render the Asserted Claims obvious. Exhibits A-X contain claim charts setting forth examples where in the prior art references each element of the Asserted Claims is found. Elitek reserves all rights to combine an anticipatory reference or a combination of references with the knowledge of a person having ordinary skill in the art ("POSA") or any other reference cited in these contentions. In addition, Elitek incorporates by reference each and every prior art identified or described in the prosecution of the Asserted Patents, counterpart applications, and related applications, including the statements made therein by the applicant, as well as the prior art discussed in the specification of the Asserted Patents. To the

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extent Repairify asserts that there exist objective indicia of obviousness, Elitek reserves its right to respond at the appropriate time.

In some instances, Elitek may have treated certain prior art as anticipatory where certain elements are expressly, implicitly, or inherently present based on Repairify's apparent claim construction, as reflected in Plaintiff's Preliminary Infringement Contentions and claim construction briefing and arguments. Elitek reserves the right to contend that each of the anticipatory prior art renders the claims obvious either in view of such prior art alone or in combination with other prior art. To the extent that any prior art disclosed in these contentions is not cited in the attached claim charts, Elitek also reserves the right to rely on the disclosed prior art, either alone or in combination with one or more of the other prior art disclosed herein.

To the extent any element is not provided by an expressly enabling disclosure by the prior art cited in the attached claim charts, all elements of the Asserted Claims of the Asserted Patents would still be the inherent result of putting into practice the methods and apparatuses described by the prior art referenced herein. In particular, each anticipatory prior art may be combined with: (1) information known to persons skilled in the art at the time of the alleged invention; (2) any of the other anticipatory prior art; and/or (3) any of the additional prior art identified below.

The prior art identified herein and in the attached Exhibits A-X reflect knowledge within the understanding of a POSA as of the earliest priority date of the Asserted Patents. In many instances, any one of a number of prior art identified below may be combined to render a claim obvious. The identification of prior art below and in the attached Exhibits does not exclude specific combinations. There are many possible combinations of the references listed herein, and it is not practical for all potentially relevant combinations to be identified.

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To the extent one or more prior art references are combined to render the Asserted Claims obvious, a POSA would have been motivated to make such combinations with a reasonable expectation of success. As the United States Supreme Court held in *KSR Int'l Co. v. Teleflex, Inc.*, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." 127 S. Ct. 1727, 1739 (2007). The Supreme Court further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *Id.* at 1740.

Moreover, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742. Indeed, the Supreme Court held that it is sufficient that a combination of elements was "obvious to try," holding that "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense." *Id.* "In that instance the fact that a combination was obvious to try might show that it was obvious under § 103." *Id.* "Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it." *Id.* Finally, the Supreme Court recognized that "[g]ranting patent protection to advances that would occur in the ordinary course

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without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility." *Id.* at 1741.

Accordingly, one of ordinary skill in the art would have recognized that the results of certain combinations were predictable and would have been clearly motivated to modify and combine the prior art items identified above to arrive at the alleged inventions of Asserted Claims of the Asserted Patents. Indeed, at least the following rationales support a finding of obviousness based on the combinations set forth in detail below:

(A) combining prior art elements according to known methods to yield predictable results;

(B) simple substitution of one known element for another to obtain predictable results;

(C) use of a known technique to improve similar devices (methods, or products) in the same way;

(D) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(E) "obvious to try"—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

(F) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; and

(G) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

The Asserted Claims are directed to systems and methods for remotely communicating with and programming one or more subsystems of a vehicle. As described below, each of the below-identified prior art items is directed to the same field as the Asserted Patents, namely, communicating with and programming of a vehicle through its OBD port. Further, each prior art item is solving the same problem as the Asserted Claims, which is performing the communicating and programming remotely. For example, like the Asserted Patents, the prior art recognizes that

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repair shops may not have the necessary tools, resources, or expertise to diagnose and repair certain issues or that, sometimes, it may be necessary to repair a vehicle that is not at a repair shop or similar type of facility. *See generally infra.* Further, the prior art recognized that a vehicle's OBD port provides the ability to access and program the vehicles sub-systems. *Id.* And that combining this functionality with known network systems, such as the Internet and/or wireless communication systems, provides the ability to access the vehicle's sub-systems remotely to communicate with and program vehicles. *Id.* Thus, in order to achieve an efficient, streamlined, reliable, low latency and/or cost-effective solution, a person of ordinary skill in the art would have been motivated to combine any of the identified prior art with each other and achieved the expected results and, as such, any of the above mentioned rationales would be applicable. That is, a POSA would have been motivated to and had a reasonable expectation of success of achieving the claimed invention by combining the identified prior art.

1.   Johanson

The article "Relaying Controller Area Network Frames over Wireless Internet for Automotive Testing Applications" by Mathias Johanson, Lennart Karlsson and Tore Risch ("Johanson") was published in September 2009. Johanson is prior art under, at least, pre-AIA 35 U.S.C. §§ 102 (a) and (b). Johanson is directed at finding a solution for remote testing, analysis, diagnostics, calibration, and providing software updates to vehicles through the vehicles OBD port. Johanson at 1 ("With the advent of wireless communication technologies . . . an opportunity has emerged for interconnecting the CAN bus in a vehicle with the Internet, enabling remote access to the ECUs from virtually anywhere."). To accomplish this, Johanson discloses a system and method for transporting Controller Area Network ("CAN") frames over a network such as the Internet, to allow remote diagnostics, remote CAN bus analysis, remote Electronic Control Units ("ECU") calibration, and remote ECU software download of a vehicle. *Id.* at 1.

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Figure 1. The client application on a remote host (right) communicates
over an internetwork with the ECUs connected to the CAN network (left),
via a gateway node (GW)

Johanson describes converting ("encapsulating") CAN frames into packets for transmission over the Internet and then reconverting ("decapsulating") the packets back into CAN frames after transmission. *Id.* at 1-4. Johanson discloses the use of a Wireless Communication Unit ("WCU") that is connected to the CAN bus of a vehicle and to a remote host running a CAN application. *Id.* at 4. The disclosed protocol works in both directions such that it is appropriate for two-way applications. *Id.* at 4. Johanson provides that:

> With a CAN-over-IP relay device connected to the car, all traffic can be sent to a remote destination for real-time analysis. At the remote host, a virtual CAN driver can be installed, making it possible to use the standard CAN analysis without modification. It is also possible to inject CAN frames onto the remote CAN bus.

Id.

2.   Gruhler

"Teleservice of CAN Systems via Internet" by Gerhard Gruhler, Gerd Nusser, Dieter Bühler, and Wolfgang Küchlin ("Gruhler") was published in 1999. Gruhler is prior art under, at least, pre-AIA 35 U.S.C. §§ 102 (a) and (b). Gruhler is directed to remote monitoring, remote control, remote maintenance, servicing and customer support of vehicles over large distances. Gruhler at 1. In particular, Gruhler was trying to solve the problem of allowing remote access to CAN devices over the Internet as if the remote CAN devices were local. *Id.* To accomplish this, Gruhler discloses a system to access remote CAN devices over the Internet as if they were local. *Id.* Gruhler consists of at least two gateways connected over the Internet. *Id.* CAN messages are converted to network compatible packets, sent over the Internet and then re-converted back to

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CAN messages. *See, e.g.,* Figs. 3 and 6. Gruhler allows the use of local CAN tools to diagnose and maintain remote CAN devices, such as for cars and trucks. *Id.* For example, Gruhler describes a situation where a truck driver experiencing a breakdown in the middle of nowhere can use a mobile phone to establish a connection to the Internet and enable remote access to the CAN devices in the truck allowing a distant engineer to perform diagnostics remotely on the vehicle. *Id.* at 7. Figure 1 of Gruhler gives an overview of its system.

Figure 1. Teleservice System Overview
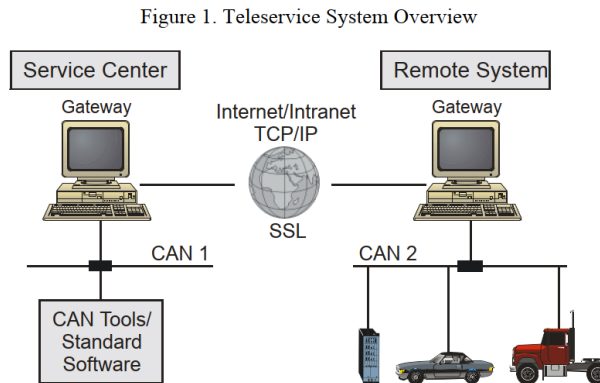
3.   Weiss

U.S. Patent No. 7,519,455 ("Weiss") has a PCT filing date of May 20, 2003, was published on October 19, 2006, and was issued on April 14, 2009. Weiss is prior art under, at least, pre-AIA 35 U.S.C. §§ 102(a), (b), and (e). Weiss is directed at solving the problem of being able to control units in a vehicle through a remote network. Weiss at 1:15-34. Weiss discloses a system for remote action, remote diagnosis, remote service, software download, etc. for a vehicle. *Id.* at 2:30-34. Specifically, Weiss discloses a method and device for remote vehicle-related telematics service. *Id.* at Abstract. Weiss uses a gateway device in the vehicle to connect to the vehicle for receiving and transmitting vehicle data wirelessly to a remote location. *Id.* at 1:53-63. For example, Figure 1 shows a system where information is being exchanged between a vehicle and a server via wireless network or a data network such as the Internet, where the server can analyze data and generate recommendations. *Id.* at 2:43-47.
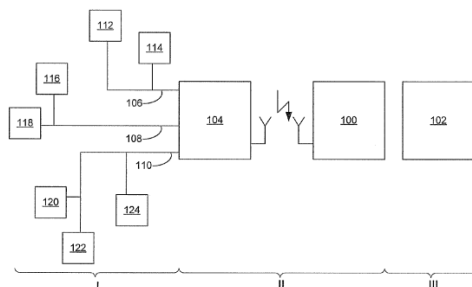
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FIG. 1

The server can be connected to a tester, operator console, PC, or a similar device to evaluate the data. *Id.* at 3:6-13; 5:22-37. Weiss uses a gateway device connected to a vehicle that converts vehicle data to data packets for wireless transmission and a second gateway device located remotely that reconverts the data packets to vehicle data for remote analysis. *Id.* at 4:38-5:41.

4.   Lightner

U.S. Patent No. 6,732,031 ("Lightner") was filed on May 29, 2001 and issued on May 4, 2004. Lightner is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e). Lightner is directed at providing a system that is simple, low-cost, and easy-to-install that could both access and send data over a vehicle's OBD port using a remote wireless system that connects, via the Internet, to a remote device that can access and transmit data to the vehicle. Lightner at 2:49-55. To accomplish this, Lightner discloses a method and apparatus for wireless diagnostics of vehicles that includes the steps of generating vehicle data, transferring vehicle data through an OBD connector to a wireless transmitter, transmitting packet data representing the vehicle data over the Internet to a host computer, and analyzing the vehicle data remotely. *Id.* at Abstract, 2:49-3:5; 3:66-4:15. Lightner discloses bi-directional communication with a vehicle's OBD bus allowing it to diagnose, repair, and program vehicles remotely, including, for example, sending data to the vehicle to adjust settings in the vehicles' ECUs, OBD sensors, engine properties, update software, and/or control other vehicle functions. *Id.* at 3:66-4:14, 4:53-57, 6:40-46.
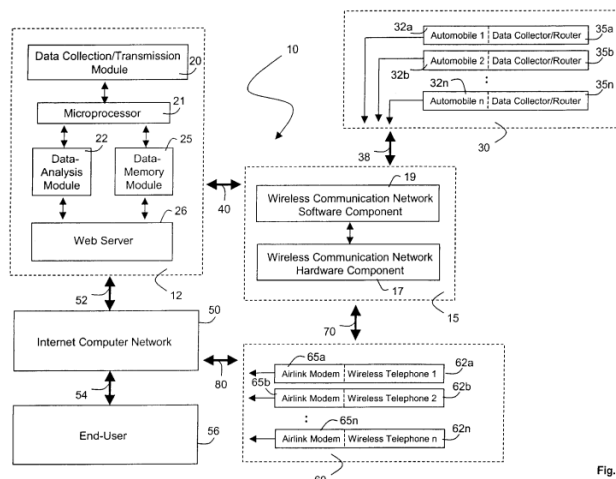
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Fig. 1

5.   Naima

U.S. Patent Publication No. 2009/0150118 ("Naima") has a PCT filing date of August 31, 2006 and was published on June 11, 2009. Naima is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e). Naima recognized that making engine control available through the OBD connectors allows many possibilities, such as the remote diagnosis and control of the vehicle. Naima ¶¶ 2-10. Naima was developing a system and method to take advantage of the OBD connectors by taking advantage of equipment that may not be readily available at the vehicle site but can connect securely via remote means. *Id.* Specifically, Naima discloses a method and system for remote automotive vehicle diagnosis, monitoring, and control of a vehicle computer. *Id.* at ¶ 2. A remote computer can collect and process vehicle data. *Id.* at ¶ 50. The remote computer can also control vehicle sub-systems. *Id.* at ¶¶ 23-29, 50. The vehicle has a transceiver connected to the computer through the OBD port that can wirelessly and bi-directionally communicate with the remote computer. *Id.* The transceiver also translates the vehicle data such that it can be sent to the remote computer. *Id.*
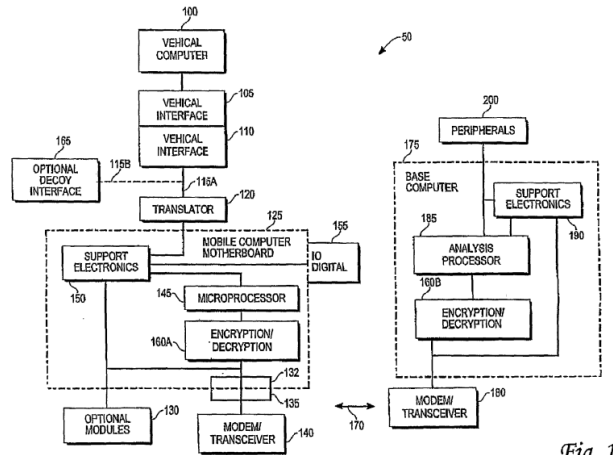
18

Fig. 1

6.   Pruzan

U.S. Patent No. U.S. Patent No. 6,728,603 ("Pruzan") was filed on December 18, 2001 and

issued on April 27, 2004. Pruzan is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and

(e). Pruzan recognizes a need to have the ability to remotely monitor and insert messages on a

vehicle bus over a network. Pruzan at 1:31-46. To satisfy this need, Pruzan discloses a protocol

converter 30 connected to the vehicle's data bus that communicates with a remote diagnostic

system 40 via a wireless link 32. *Id.* at 3:37-4:39; Fig. 1.

FIG. 1
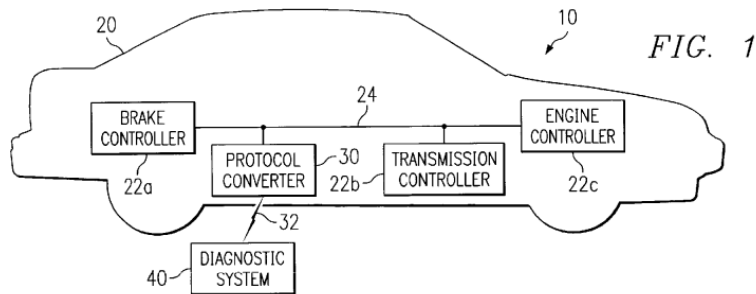
Protocol converter 30 is able to receive the electrical signals from bus 24 and insert

electrical signals onto bus 24 representing messages. *Id.* at 3:50-53. Protocol converter 30 is able

to exchange messages with diagnostic system 40 by converting messages from the bus 24 into an

appropriate format for transmission over the wireless link 32 and by converting messages received

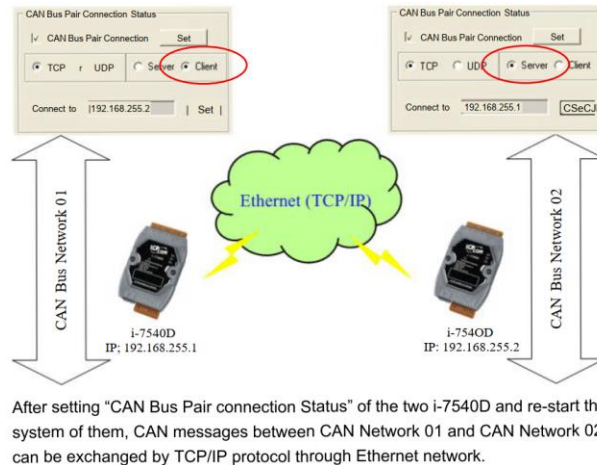from the diagnostic system 40 into an appropriate format for communication on the bus 24. *Id.* at

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3:53-60. "Thus, protocol converter 30 allows diagnostic system 40 to 'listen' to the messages on bus 24, send messages to the controllers 22, and/or receive messages from controllers 22." *Id.* at 3:60-63. The remote diagnostic system 40 can request/receive/monitor data from the device, analyze it, and send messages to the device to be implemented on the vehicle. *Id.* at 3:37-4:39. "[P]rotocol converter 30 may be useful for remotely programming a controller during manufacturing or use of vehicle 20, also reducing time and cost." *Id.* at 5:60-62.

7.   i-7540D

Version 1.4 of the "The i-7540D CAN-Ethernet Gateway – User's Manual" ("i-7540D Manual") was published in April 2008. Version 1.5 of the "The i-7540D CAN-Ethernet Gateway – User's Manual" ("i-7450D Manual 2") was published in December 2008. Version 1.4 of the "The I-7540D CAN-Ethernet Gateway Quick Start User Guide ("i-7450D Quick Start") was published in December 2008. Also, ICP DAS had a website describing the i-7540D product and offering it for sale at least as early as January 2008. ("i-7450D Website"). The i-7540D Manual, i-7450D Manual 2, i-7450D Quick Start, and i-7450D Website, individually and/or collectively, are prior art under, at least, pre-AIA 35 §§ 102 (a) and (b). Moreover, on information and belief, the i-7540D device, i-7540-WF device, and accompanying software ("the i-7540D Product") was known, used, and/or on sale in the United Sates before the filing of the Asserted Patents, and therefore, the i-7540D Product is prior art under, at least, pre-AIA §§ 102(a) and (b). (The i-7540D Product, i-7540D Manual, i-7450D Manual 2, i-7450D Quick Start, and i-7450D Website are collectively referred to as "i-7540D."). The i-7540D discloses a device that supports transparent, protocol-independent exchange of CAN messages over long distances for use in a wide variety of applications. I-7540D Manual at 7. Specifically, the i-7540D is for the coupling of CAN networks over the Internet for remote monitoring and control. *Id.* at 4. The i-7540D can be used in a variety of different applications, including vehicle automation. *Id.* at 7. A remote CAN network, *e.g.,*

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remote tool, can connect to the i-7540D device to communicate over the Internet with a second i-7540D device connected to a second CAN network, *e.g.,* a vehicle, that allows for remote monitoring and control of the second CAN network by the first i-7540D device. *Id.* at 48. The i-7540-WF device supports wireless communication via WiFi. ICPAS – 0005.


Application 03: One acts as a server, the other acts as a client.
CAN Bus Pair Connection by using TCP method (port: 10003).

After setting "CAN Bus Pair connection Status" of the two i-7540D and re-start the system of them, CAN messages between CAN Network 01 and CAN Network 02 can be exchanged by TCP/IP protocol through Ethernet network.

8.   Asano

U.S. Publication Number 2007/0100513 ("Asano") has a PCT filing date of December 15, 2003 and was published on May 3, 2007. Asano is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e). Asano recognizes that it would be beneficial to be able to update vehicle software without having to bring a vehicle to a dealership or repair shop, and that it would be convenient and improve efficiency to remotely update vehicle information. Asano at ¶¶ 4-5. To accomplish this, Asano teaches a system for remotely programming one or more sub-systems of a vehicle using bi-directional communication. *Id.* at ¶¶ 38-44. Asano discloses a vehicle with a transceiver connected to the vehicle control units that can bi-directionally and wirelessly communicate with a base station. *Id.* at ¶¶ 43-44. The base station can remotely update information on the vehicle control units. *Id.*

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FIG. 1
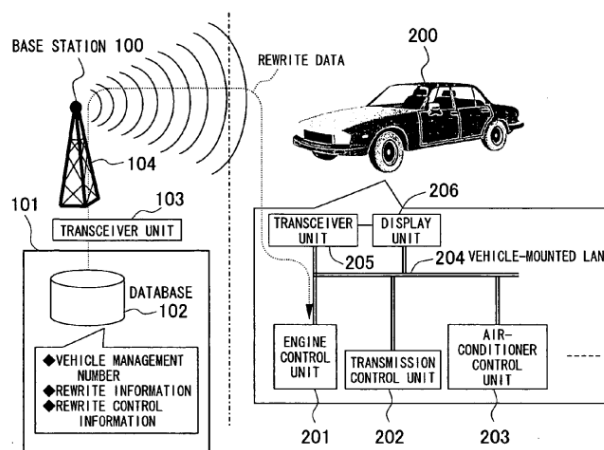
9.   Cohen

U.S. Publication Number 2011/0313593 ("Cohen") has a filing date of June 21, 2010 and was published on December 22, 2011. Cohen is prior art under, at least, pre-AIA 35 U.S.C. § 102(a) and (e). Cohen recognizes that there is a need for remotely tracking and manipulating a vehicle's movements and functions, and that this can be accomplished using a vehicle's OBD port. Cohen at ¶ 8, 18. To satisfy this, Cohen discloses the use of a transceiver device 120 connected to a vehicle through its OBD port 110 to send, receive, and interpret data transmitted from a wireless router 210 connected to a computer through a wireless network 215, such as the Internet. *Id.* at ¶¶ 13-21, 30-37, Fig. 2.

Figure 2

22
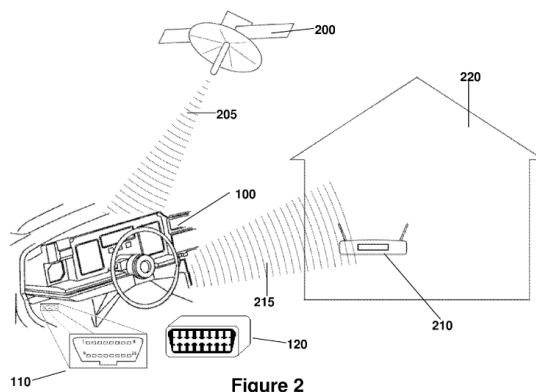
The OBD port 110 has a standard 16 pin connector that allows transceiver device 120, with a complementary connector, to interact with the vehicle's sub-systems, thus, transceiver device 120 is capable of obtaining diagnostic information and other information from the vehicle. *Id.* The remote computer can form a connection through a wireless network with the transceiver device connected to the vehicle to obtain information about the vehicle. *Id.* The remote computer can also issue commands to the vehicle through the transceiver device 120, *e.g.,* to turn off the vehicle. *Id.* at ¶ 44.

10.   Lipscomb

U.S. Patent No. 8,340,861 ("Lipscomb") was filed on August 7, 2009, published on February 18, 2010, and issued on December 25, 2012. Lipscomb is prior art under, at least, pre-AIA 35 U.S.C. § 102(a) and (e). Lipscomb recognizes the importance of having a wireless diagnostic tool that has the ability to connect to remote servers and databases. Lipscomb at 3:25-46. To achieve this, Lipscomb discloses a vehicle communication interface ("VCI") that plugs into a vehicle's OBD port and connects in a wired or wireless manner to a diagnostic tool. *Id.* at 3:20-31. The wireless connection can be in the form of Wi-Fi, Bluetooth, infrared, cellular, satellite, radio frequency, and other types of wireless connections. *Id.* at 8:10-12. The diagnostic tool can diagnose issues with the vehicle and communicate with other remote devices. *Id.* at 1:22-41. The user will experience a seamless connection regardless of whether the diagnostic tool is connected to the VCI in a wired or wireless manner. *Id.* at 8:56-58.

FIG. 7
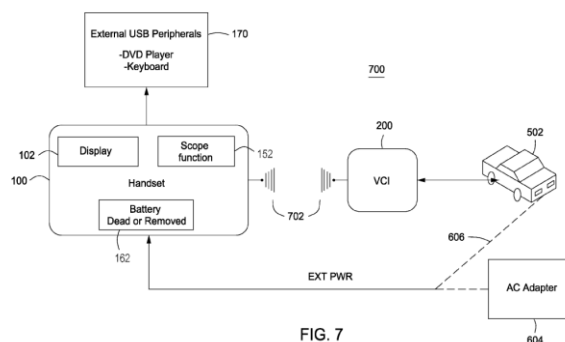
Both, the VCI and diagnostic tool, have hardware that allow them to communicate using different communication protocols as well as to convert communication signals to vehicle data and vice versa. *Id.* at Figs. 8 and 9.

11.   Nagy

U.S. Patent Publication 2008/0015748 ("Nagy") was filed on March 8, 2007 and published on January 17, 2008. Nagy is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e). Nagy recognizes the need to perform remote vehicle diagnosis and assistance, especially when a car is being operated or not near a service station. Nagy at ¶ 3. To accomplish this, Nagy discloses a system and methods for extracting, monitoring, analyzing, and exchanging data with a vehicle interface module (VIM) 104 coupled to the OBD port of a vehicle. *Id.* at ¶ 9. The data obtained can be viewed by end users or used for programmatic access by software applications. *Id.* For example, the system can read data on the vehicle's internal mechanical operation and send commands to the vehicle. *Id.* at ¶ 45. The system allows for remote and real-time diagnostic and maintenance of a vehicle. *Id.*

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FIG. 1
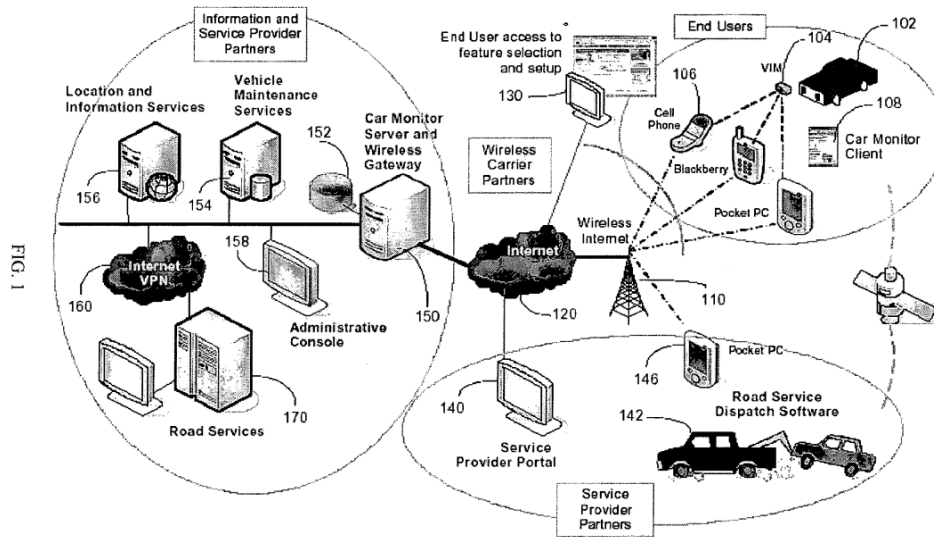
12.   Beckmann

U.S. Patent No. 10,719,813 ("Beckmann") was filed on September 26, 2011 and claims priority to a provisional application filed on September 29, 2010. Beckmann is prior art under, at least, pre-AIA 35 U.S.C. § 102(a) and (e). Beckmann recognizes that the increasing complexity of modern vehicles makes the use of proprietary diagnostic tools impractical because the sheer quantity of information required relating to all possible repairs renders old tools obsolete rapidly. Beckmann at 2:54-58. Also, given the reliance on software in vehicles requires frequent software updates to diagnostic tools. *Id.* at 2:58-64. Moreover, as diagnostic tools become increasingly capable and complete, technicians need more training to use them properly. *Id.* at 2:58-67. Therefore, Beckmann teaches accessing a remote central repository with the necessary training, experience, and tools to assist a multitude of repair shops. *Id.* at 3:49-4:2. Specifically, Beckmann discloses a system for using remotely located resources to diagnose and resolve vehicle issues. That is, Beckmann discloses connecting a computer to the OBD port of a vehicle, wherein that vehicle computer can communicate over the Internet with a remote computer such that it appears that the vehicle is communicating directly with the remote computer. *Id.* at 9:4-31. The remote

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system can perform remote repair and diagnostics in the same manner—as if the diagnostic tool was located next to the vehicle. *Id.* at 4:15-40.
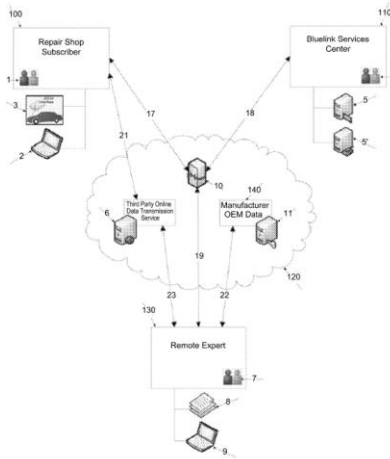
13.   Marbach

U.S. Patent No. 6,654,355 ("Marbach") was filed on December 14, 1999 and issued on November 25, 2003. Marbach is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e). Marbach discloses a method and apparatus of communicating between two CAN networks over the Internet. Marbach at 2:37-58. The CAN messages are converted to data packets for transmission over the Internet and then re-converted back to CAN messages on the receiving end. *Id.* Marbach recognizes the popularity of CAN messages in automotive diagnostics, but because CAN messages have a different format from other communication networks, such as the Internet, there needs to be a way to transmit such information over such networks to allow remote access to, for example, a remote computer, to allow monitoring and diagnostics. *Id.* at 2:20-33.
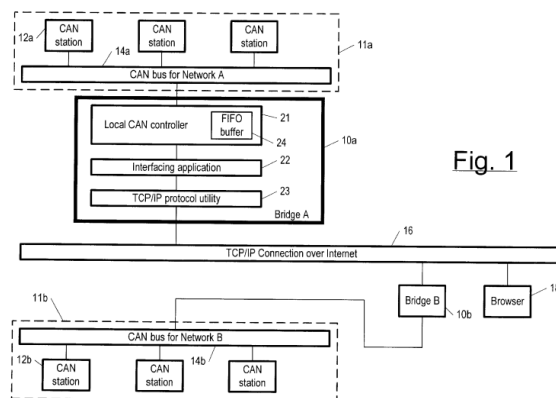
Fig. 1

14.   Knight

U.S. Patent Publication No. 2003/01677345 ("Knight") was filed on February 6, 2003 and published on September 4, 2003. Knight is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e). Knight teaches an adapter that communicates between a vehicle control computer coupled to a vehicle and a remote computer. Knight at ¶ 16. The adapter acts as a network bridge between the vehicle communications network and remote computers and service tools. *Id.* at ¶¶ 149-150. The adapter can communicate with the vehicle using a variety of well-known protocols, *e.g.*, J1939, J1587/J1708, etc. *Id.* at ¶ 15-16. The remote computers may be PCs or portable service tools running vehicle diagnostic and/or service tool software. *Id.* at ¶¶ 150, 151, 191. The adapter allows the remote computer to be considered as one of the "nodes" on the vehicle communication network. *Id.* at ¶ 146.
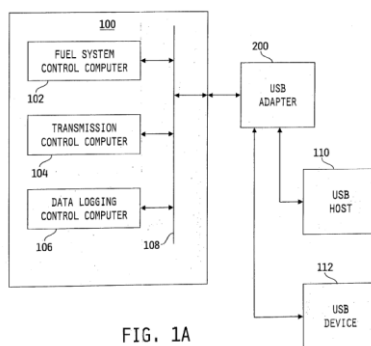

FIG. 1A

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15.   **Bromley**

U.S. Patent Publication No. 2004/0167689 ("Bromley") was filed on August 6, 2001 and published on August 26, 2004. Bromley is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e). Bromley recognized a need for a system, method, and computer program product for remote vehicle diagnostics, monitoring, configuration, and reprogramming. Bromley at ¶ 7. To fill this need, Bromley disclosed a system for remote vehicle diagnostics, monitoring, configuring, and reprogramming comprising an on-board unit coupled to the vehicle data bus, which is connected to the vehicle's controllers. *Id.* at ¶¶ 8-9. The on-board unit communicates with an on-board server. *Id.* at ¶ 11. The on-board unit converts data as needed to be communicated to the vehicle or for transmission to the server. *Id.* at ¶ 58. The on-board server is coupled to an application server that allows a user to receive vehicle information as well as send commands to the vehicle for configuration, calibration, reprogramming, etc. *Id.* at ¶¶ 11-19. The on-board server communicates data between the on-board unit and application server. *Id.* at ¶ 54. The system uses various wired and wireless methods for communication, including the Internet, satellite, cellular, data lines, etc. *Id.* at ¶¶ 50, 63.
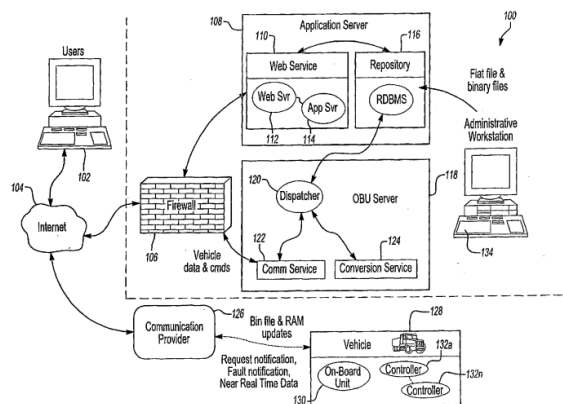
16.   **Kapolka**

U.S. Patent Publication No. 2005/0060070 ("Kapolka") was filed on April 12, 2004 and published on March 17, 2005. Kapolka is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e). Kapolka recognized that there was a need for a system that can monitor, configure, program, and diagnose vehicles and/or vehicle components while accommodating the different needs of different users and different industries. Kapolka at ¶ 16. To address that need, Kapolka discloses a system for remote vehicle diagnostics, telematics, monitoring, configuring, and reprogramming. *Id.* at ¶ 17. The system comprises an on-board unit (OBU) that is capable of interfacing with the vehicle's ECUs and wirelessly communicating with a server. *Id.* at ¶ 73. A user, machine, and/or applications can access the vehicle and/or vehicle components through the server to monitor, scan, and program it remotely. *Id.* at ¶¶ 56-70. The system provides a modular wireless vehicle diagnostics, command, and control system with real time access to the vehicle and its systems that may be tailored to a variety of applications. *Id.* at ¶ 221.
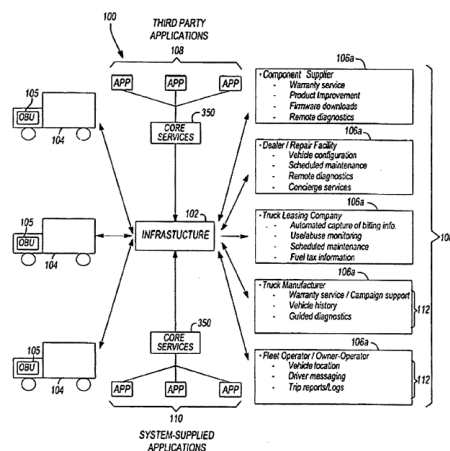

Fig-1

17.   **Dwan**

U.S. Patent Publication No. 2011/0276218 ("Dwan") was filed on May 5, 2010 and published on November 10, 2011. Dwan is prior art under, at least, pre-AIA 35 U.S.C. § 102(a)

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and (e). Dwan recognized that there are many examples of wireless vehicle diagnostic systems and discloses another system and method for remote vehicle servicing. Dwan at ¶¶ 4-9. The vehicle servicing operations may include, but are not limited to, vehicle diagnostics, vehicle module software/firmware updates, and vehicle key reprogramming. *Id.* at ¶ 9. Dwan discloses a diagnostic terminal 102, that may be any type of computer, such as a PC, PDA, phone, etc., that has diagnostic software. *Id.* at ¶ 33. The diagnostic terminal 102 may also communicate with a database that may have additional vehicle information, such as diagnostic information. *Id.* at ¶ 34. The diagnostic terminal 102 exchanges data with a vehicle computing system (VCS) 200 that is connected to vehicle 106 to perform any necessary diagnostics, updates, programming, etc. *Id.* at ¶ 37. That is, the VCS 200 is a gateway for the diagnostic terminal to diagnose and address issues with the vehicle computing system. *Id.* Dwan can communicate using different communication protocols, including wired and wireless (Bluetooth, WiFi, cellular, etc.). *Id.* at ¶ 36.

Fig-1

Fig-2
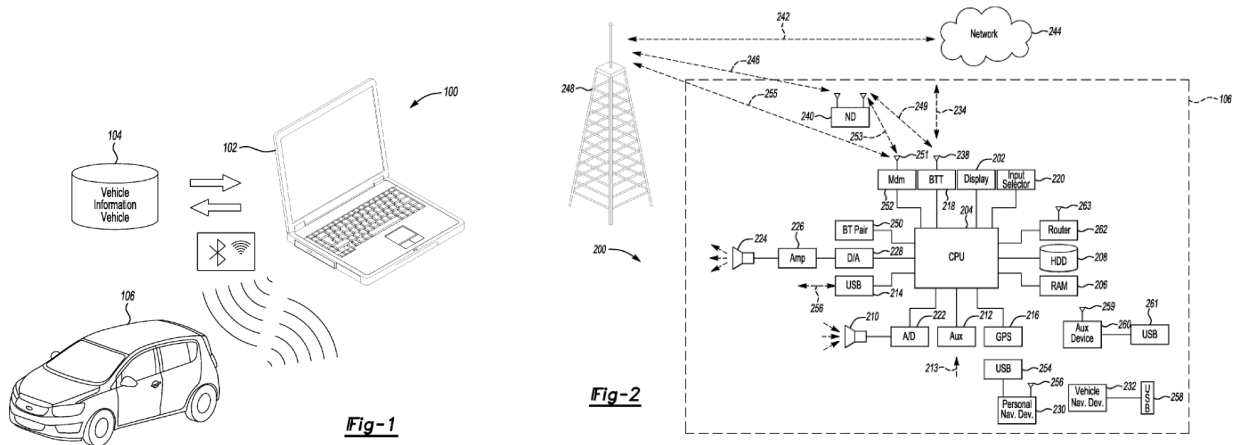
18.   Langlechner

German Patent Publication No. DE 10,126,880 ("Langlechner") was filed on June 1, 2001 and published on December 12, 2002. Langlechner is prior art under, at least, pre-AIA 35 U.S.C. § 102(a) and (b). Langlechner recognizes that diagnostic devices are costly and that it may be

difficult for small repair shops to have diagnostic tools for all vehicles, especially when certain

diagnostic tools are specific to certain vehicles. Langlechner at ¶ 4. Langlechner proposes a

solution where a remote facility has the necessary diagnostic tools and allows local repair shops to

connect to the remote facility to perform remote vehicle diagnostics. *Id.* at ¶ 8. Specifically,

Langlechner discloses the use of a device 9 connected to a vehicle computer 3 using an adapter 1.

Id. at Fig. 1. The device 9 can then send vehicle data to a remote location for diagnostics. *Id.* The

remote location comprises a receiving device 13 and routers 15 and 17 that are a connected to a

multitude of diagnostic tools 19-21 and 29-31 that have specific functionality and/or are for certain

vehicle types. *Id.* at ¶ 24; Fig. 2. The remote diagnostic tools are the same diagnostic tools that

are typically connected directly to a vehicle. *Id.* at ¶ 27. The receiving device 13 converts the data

to the appropriate format and routes it to the appropriate diagnostic tool. *Id.* at ¶¶ 26-27. Not only

can the remote diagnostic tools 19-21 and 29-31 receive vehicle data and analyze it, but through a

bidirectional connection, the remote diagnostic tools 19-21 and 29-31 can send/write data to the

vehicle's systems as if the remote diagnostic tool was directly connected to the vehicle. *Id.* at ¶¶

29-30.

Fig. 1

Fig. 2
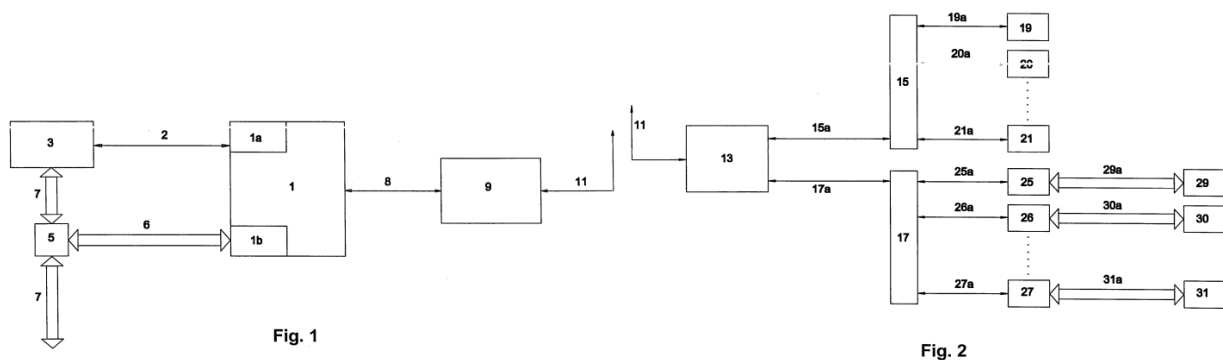
19.   Habermas

U.S. Patent No. 7,366,589 ("Habermas") was filed on May 13, 2004 and issued on April

29, 2008. Habermas is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e). Habermas

discloses a system and method for remote reflashing of engine control unit software. Habermas

discloses the use of a telematics device 120, which includes a processor 122 and modem 124,

connected to a vehicle 110 and its network 112. Habermas at 2:53-3:6. The processor 122 controls

communications between the telematics device 120, vehicle 110, and a remote location 170, which

may include hardware and software. *Id.* at 3:22-44. The remote location 170, which includes "any

suitable hardware and software capable of providing communication services to telematics device

120 in mobile vehicle 110," can perform diagnostic tests and/or update/reflash software for

targeted engine control units on vehicle 110 through telematics device 120. *Id.* at 5:65-67, 8:28-

67. The remote location 170 can also perform pre-installation and post-installation scans on
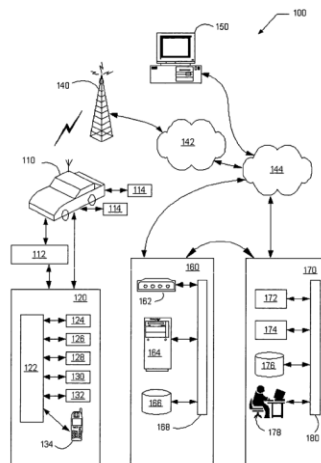
vehicle 110. *Id.* at 9:11-56.

FIG. 1

20.   Duddles

U.S. Publication No. 2007/0185624 ("Duddles") was filed on February 7, 2006 and

published on August 9, 2007. Duddles is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b),

and (e). Duddles incorporates by reference the disclosure of Habermas. Duddles at ¶ 35. Duddles

discloses a method for remotely reprogramming identified engine control units of a vehicle. *Id.* at

¶ 33. Vehicle 20 has a telematics unit 22 that can communicate wirelessly with a remote facility

16, for example via a cellular or satellite network. *Id*.; Fig. 1. The remote facility 16 can send

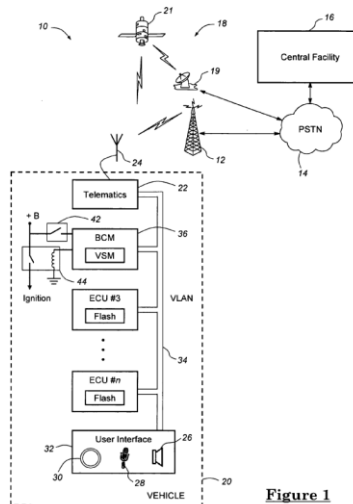new programming to vehicle 20 and/or receive diagnostic information from vehicle 20. *Id.*

Figure 1

21. Ausburger

U.S. Publication No. 2006/0041337 ("Ausburger") was filed on August 19, 2004 and

published on February 23, 2006. Ausburger is prior art under, at least, pre-AIA 35 U.S.C. § 102(a),

(b), and (e). Ausburger discloses a system for remotely programming the engine control units of

a vehicle. Ausburger at ¶ 10. A client computer 22 is connected to a vehicle 14 through its OBD

port. *Id.* at ¶ 22. The client 22 acts as a proxy to a remote server 16. *Id.* at ¶ 14. The client 22

sends identification information to remote server 16 so remote server 16 can send the appropriate

programming data back to the vehicle 14 to reprogram the vehicle engine control units 12. *Id.* at

¶ 24. The remote server 16 can communicate in near real-time over the Internet and is also capable

of programming other computers used in vehicle 14 in addition to the engine control units 12. *Id.*
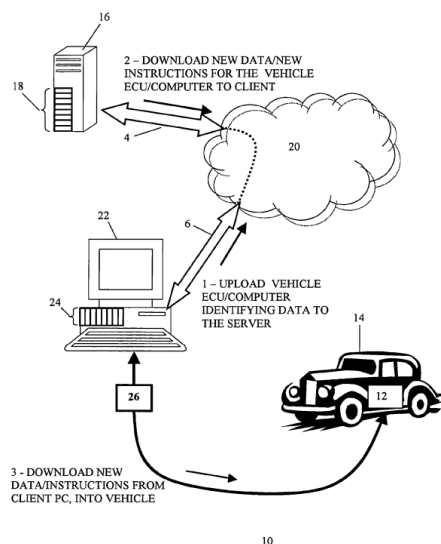
at ¶¶ 34, 38, 40.

FIG. 1

22.   Lewis

U.S. Publication No. 2011/0320089 ("Lewis") was filed on June 25, 2010 and published on December 29, 2011. Lewis is prior art under, at least, pre-AIA 35 U.S.C. § 102(e). Lewis discloses a method of remotely updating a vehicle engine control unit. A remote update server 18 can reprogram vehicle by communicating with a data communication module 16 that communicates with the vehicle's engine control units 14 over a controller area network. Lewis at ¶¶ 17-18. The remote server 18 can also calibrate or reconfigure various vehicle systems. *Id.* at ¶ 22. Reprogramming, reconfiguration, and calibration can be initiated by the data communication module 16 or by the remote server 18. *Id.* at ¶ 23. The remote server 18 can also receive information about the vehicle from data communication module 16. *Id.* at ¶ 20.
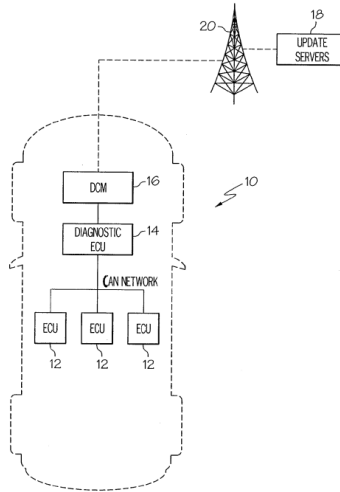
FIG. 1

23.   Banas

U.S. Publication No. 2002/0035429 ("Banas") was filed on July 26, 2001 and published

on March 21, 2002. Banas is prior art under, at least, pre-AIA 35 U.S.C. § 102(a), (b), and (e).

Banas discloses wireless reprogramming of vehicle electronic control units. Banas at ¶ 2. A

reprogramming unit 66 includes a transmitter 68 to transmit updated programming to a device 10

connected to the vehicle's systems using wireless technology such as cellular, space, or radio

systems. *Id.* at ¶¶ 18-19; Figs. 1, 2. By using device 10 in combination with reprogramming unit

66, a user is able to remotely update the software for the vehicle's engine control units without

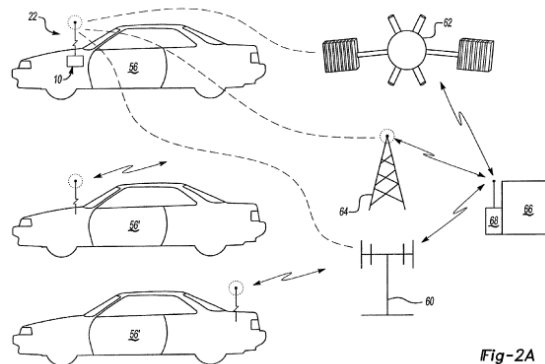having to be physically connected to or located near the vehicle. *Id.* at ¶¶ 8, 19.

Fig-2A

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24.   SAE J2534

In February 2002, the Society of Automotive Engineers ("SAE") published its J2534 standard. The SAE 2534 standard, which is admitted prior art discussed in the Asserted Patents, is prior art under, at least, pre-AIA 35 U.S.C. §§ 102 (a) and(b). The J2534 standard describes how a remote computer can program a vehicle by communicating with a pass-thru device connected to the vehicle. SAE 2534 at 5. The J2534 standard defines two interfaces for the pass-thru device: the interface between the software running on the remote computer and the software running on the pass-thru device; and the interface between the pass-thru device and the vehicle. *Id.* The J2534 standards states that "[p]rogramming application software supplied by the vehicle manufacturer will run on a commonly available generic PC," *i.e.,* a scan tool. *Id.* The pass-thru device connects to the vehicle via the OBD-II port and can communicate with the computer using a variety of technologies including "RS-232, RS-485, USB, Ethernet, or any other current or future technology, including wireless technologies." *Id.* Using the pass-thru device, the computer can remotely scan and program a vehicle. *Id.* Thus, as of 2002, the concept of remote scanning and programming a vehicle using a scan tool was well known, and the industry even had a standard on how to implement such a system.

25.   Other Relevant Prior Art

In addition to the above-listed prior art references and their combinations, Elitek expressly reserves the right to use additional prior art references for other purposes, including, without limitation, providing background pertaining to the subject matter of the Asserted Patents, laying out the scope and content of the prior art, providing evidence of motivation to combine, providing evidence of reasonable expectation of success, providing evidence of obvious ways to try to accomplish the Asserted Claims, providing evidence of inherency of the Asserted Claims, providing evidence of the knowledge of ordinary skill in the art, and providing evidence rebutting

allegations of non-obviousness, if any, of the Asserted Claims. Such prior art references include

at least the following:

Patent Number/Publication	Inventor/Author	Issue/Publication Date
U.S. Patent No. 5,491,418	Alfaro et al.	February 13, 1996
EP 1,069,422	Hiermann	January 17, 2001
U.S. Patent No. 6,181,994	Colson et al.	January 30, 2001
U.S. Patent No. 6,389,337	Kolls	May 14, 2002
U.S. Pat. No. 6,647,323	Robinson et al.	November 11, 2003
U.S. Pub. No. 2004/0010358	Oesterling et al.	January 15, 2004
EP 1,530,168	Ravo	May 11, 2005
U.S. Pub. No. 2005/0131585	Luskin et al.	June 16, 2005
U.S. Pub. No. 2005/0154500	Sonnenrein et al.	July 14, 2005
U.S. Pat. No. 6,925,368	Funkhouser et al.	August 2, 2005
U.S. Patent No. 6,928,348	Lightner et al.	August 9, 2005
U.S. Pub. No. 2005/0176482	Raisinghani et al.	August 11, 2005
U.S. Patent No. 6,956,501	Kitson	October 18, 2005
U.S. Patent App. 2005/0251304	Cancellara et al.	November 10, 2005
Overview of Remote Diagnosis and Maintenance for Automotive Systems	You et al.	April, 2005
U.S. Patent No. 6,957,136	Tachibana et al.	October 18, 2005
U.S. Pub. No. 2007/0083303	O'Sullivan et al.	April 12, 2007
U.S. Patent No. 7,225,065	Hunt et al.	May 29, 2007
U.S. Pub. No. 2007/0156311	Elcock et al.	July 5, 2007
Improving Vehicle Diagnostics through Wireless Data Collection and Statistical Analysis	Johanson et al.	October 15, 2007
U.S. Pat. No. 7,363,129	Barnicle et al.	April 22, 2008
U.S. Pub. No. 2008/0140281	Morris et al.	June 12, 2008
U.S. Pub. No. 2008/0154712	Wellman	June 26, 2008
U.S. Pub. No. 2008/0161989	Breed	July 3, 2008
U.S. Pub. No. 2008/0177438	Chen et al.	July 24, 2008
Extending Vehicular CAN Fieldbuses With Delay-Tolerant Networks	Castiñeira et al.	September 2008
U.S. Pub. No. 2008/0269975	Bertosa et al.	October 30, 2008
U.S. Pub. No. 2008/0280602	Ban	November 13, 2008
U.S. Pub. No. 2008/0319665	Berkobin et al.	December 25, 2008
EP 2,031,822	Thayer et al.	April 3, 2009
U.S. Patent No. 7,519,458	Buckley	April 14, 2009
U.S. Patent No. 7,532,962	Lowrey et al.	May 12, 2009
U.S. Patent No. 7,584,030	Graham	September 1, 2009

Patent Number/Publication	Inventor/Author	Issue/Publication Date
U.S. Pub. No. 2009/0259358	Andreasen	October 15, 2009
U.S. Patent App. 2009/0265055	Gillies	October 22, 2009
U.S. Pub. No. 2009/0273438	Sultan et al.	November 5, 2009
U.S. Patent No. 7,627,406	Wang et al.	December 1, 2009
A Study on Remote On-Line Diagnostic System for Vehicles by Integrating the Technology of OBD, GPS, and 3G	Chen et al.	2009
A Study on Speech-Controlled Real-Time Remote Vehicle On-Board Diagnostic System	Chen et al.	March, 2010
U.S. Pat. No. 7,778,752	Hunt et al.	August 17, 2010
U.S. Pub. No. 2010/0256861	Hodges	October 7, 2010
U.S. Pat. No. 7,831,363	Quigley	November 9, 2010
U.S. Patent No. 8,145,379	Schwinke	March 27, 2012
U.S. Patent No. 8,769,038	Montoya	July 1, 2014
U.S. Patent No. 9,175,649	McGuffin	November 3, 2015

In addition, fact discovery is ongoing and many of the documents and other information regarding the features of these products reside with third parties. Elitek's investigation is ongoing, and it reserves all rights to supplement its contentions as information comes to light.

Dated: August 31, 2022

Respectfully submitted,

/s/ Barry F. Irwin_____
Barry F. Irwin, P.C. (admitted *pro hac vice*)
Joseph Saltiel (admitted *pro hac vice*)
Daniel Sokoloff (admitted *pro hac vice*)
IRWIN IP LLC
150 N Wacker Dr, Ste 700
Chicago, Illinois 60606
(312) 667-6080
birwin@irwinip.com
jsaltiel@irwinip.com
dsokoloff@irwinip.com

Barry K. Shelton
Texas State Bar No. 24055029
WINSTON & STRAWN LLP
2121 N. Pearl Street
Suite 900
Dallas, TX 75201
bshelton@winston.com
(214) 453-6407 (Telephone)

Attorneys for Defendant Keystone
Automotive Industries, Inc. d/b/a Elitek
Vehicle Services

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the above and foregoing

document has been served on all counsel of record via email.

/s/ Barry F. Irwin
Barry F. Irwin